We claim:

1. A method for equalizing the float voltage of a battery cell continuously receiving a float charge, said method comprising:

monitoring the actual float voltage of the cell;

creating a float charge bypass circuit for said cell;

measuring the bypass current passing through said bypass circuit;

establishing a predetermined relationship between an optimum desired cell float voltage and the bypass current required to maintain said optimum cell float voltage;

comparing the monitored actual float voltage level of the cell with said optimum desired cell float voltage level and computing a desired bypass current based on said predetermined relationship;

comparing the computed desired bypass current with the actual measured bypass current; and

adjusting the actual bypass current to equal said computed desired bypass current, thereby equalizing the cell float voltage at said optimum level by regulating said bypass current and thereby varying the float current applied to said cell.

2. The method as claimed in claim 1, wherein said predetermined relationship comprises the formula

$$y = mx + b$$

wherein y = the bypass current with $0 \leq y \leq$ maximum regulation current;

x = the cell float voltage;

m = the slope of the plot of bypass current vs. cell float voltage; and

b = the current offset.

3. The method as claimed in claim 2, wherein the value of "m" is user adjustable.

4. The method as claimed in claim 2, wherein the value of "b" is user adjustable.

5. The method as claimed in claim 2, wherein the slope "m" includes a zero bypass current intercept point wherein there is a cell voltage "x" below which there is no bypass current to establish said current offset "b", and wherein the slope "m" further includes a maximum voltage regulation point which is the maximum cell float voltage that can be actively regulated by the bypass current.

6. The method as claimed in claim 5, wherein the step of computing the desired bypass current is based on comparing the monitored actual float voltage level of the cell and its intercept point along the slope "m".

7. The method as claimed in claim 1, wherein the step of comparing said desired bypass current with the actual measured bypass current includes the generation of a control signal directly actuating a proportional current bypass element which in turn adjusts the actual bypass current until the actual bypass current equals the desired bypass current.

8. The method as claimed in claim 1, wherein said method further includes the step of indicating the charge condition of the cell as the desired bypass

current is first compared to the actual bypass current by providing a signal which indicates that the cell is in one of three conditions, that of an overcharged condition, a fully charged condition or an undercharged condition.

9. A system for automatically maintaining each of the individual cells of a multicell battery at an optimum state of charge, said system comprising:

a device for providing a float current to said cells for continuously charging said cells;

a float current bypass circuit associated with each said cell adapted to selectively vary and divert portions of the float current to bypass the said associated cell;

means for measuring the actual bypass current for each said cell flowing through said bypass circuit and comparing said actual bypass current with a desired bypass current based on a preestablished relationship between said bypass current and a desired optimum float voltage for said cell; and

means for selectively regulating the actual bypass current for each said cell to match said desired bypass current to thereby equalize the float voltage of said associated cell.

10. The system as claimed in claim 9, wherein said float current bypass circuit, said actual bypass measuring means and said actual bypass current regulating means, for each said cell, are disposed in a single module electronically associated with said cell.

11. The system as claimed in claim 10, wherein each said module is powered by the cell with which it is electronically associated.

12. The system as claimed in claim 11, wherein the current required to power each said module comprises approximately 0.04 Ampere.

13. The system as claimed in claim 9, wherein said preestablished relationship is based on the formula:

$$y = mx + b$$

wherein y = the bypass current with $0 \leq y \leq$ maximum regulation current;

x = the cell voltage;

m = the slope of the plot of bypass current vs. cell float voltage; and

b = the current offset.

14. A module for maintaining the float voltage of a battery cell at an optimum fully charged condition while being continuously charged by a float current, said module comprising:

means for measuring the actual float voltage of said cell;

a circuit for variably bypassing and diverting a potion of the float current directed to said cell;

means for calculating and establishing a predetermined relationship between a desired optimum cell float voltage and the bypass current required to maintain said desired optimum cell float voltage;

means for determining a desired bypass current by comparing the measured actual float voltage of said cell with said predetermined relationship;

means for comparing the actual bypass current with the desired bypass current; and

means for modifying the actual bypass current to equal said desired bypass current thereby equalizing the cell float voltage by regulating the bypass current diverted from said cell.

15. The module as claimed in claim 14, wherein said predetermined relationship comprises the formula

$$y = mx + b$$

wherein y = the bypass current with $0 \leq y \leq$ a maximum regulation current;

x = the cell voltage;

m = the slope of the plot of bypass current vs. cell float voltage; and

b = the current offset.

16. The module as claimed in claim 15, wherein said slope m and said current offset b are selectively adjustable factors.

17. The module as claimed in claim 15, wherein the slope "m" includes a zero bypass current intercept point wherein there is a cell float voltage "x" below which there is no bypass current generated to establish said current offset "b" and prevent undercharging of said cell, and wherein the slope "m" further includes a maximum voltage regulation point which is the maximum cell float voltage that can be actively regulated by the bypass current to prevent overcharging of the cell.

18. The module as claimed in claim 17, wherein said means for determining the desired bypass current is based on comparing the measured actual float voltage level of the cell and the zero bypass current intercept point.

19. The module as claimed in claim 15, wherein said means for comparing said desired bypass current with the actual measured bypass current comprises a comparator circuit member and includes means for generating a control signal, and said module further includes a proportional current bypass element adapted to receive said control signal and in turn adjust the actual bypass current until the actual bypass current equals the desired bypass current.

20. The module as claimed in claim 19, wherein said module further comprises a plurality of cell condition indicator elements adapted to indicate the charge condition of the cell at the time the comparator circuit member compares the desired bypass current to the actual bypass current, said indicator elements providing signals which indicate that the cell is in one of three conditions, that of an overcharged condition, a fully charged condition or an undercharged condition.

21. The module as claimed in claim 20, wherein said cell condition indicator elements comprise three different colored indicator lights, each color representing one particular cell condition.

22. The module as claimed in claim 20, wherein said cell indicator elements further comprise means for automatic notification to a remote station of an overcharged or an undercharged cell condition.

23. The module as claimed in claim 15, wherein said battery cell is one of a plurality of series connected cells comprising a single battery, each said cell having one said module associated therewith.